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(54) **FLEXIBLE ASYMMETRIC ELECTROCHEMICAL CELLS USING NANO GRAPHENE PLATELET AS AN ELECTRODE MATERIAL**

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See application file for complete search history.

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(57) **ABSTRACT**

A flexible, asymmetric electrochemical cell comprising: (A) A sheet of graphene paper as first electrode comprising nano graphene platelets having a platelet thickness less than 1 nm, wherein the first electrode has electrolyte-accessible pores; (B) A thin-film or paper-like first separator and electrolyte; and (C) A thin-film or paper-like second electrode which is different in composition than the first electrode; wherein the separator is sandwiched between the first and second electrode to form a flexible laminate configuration. The asymmetric supercapacitor cells with different NGP-based electrodes exhibit an exceptionally high capacitance, specific energy, and stable and long cycle life.

18 Claims, 10 Drawing Sheets

